

## COMMENTARY

*This section is designed for the discussion and debate of current economic problems. Contributions which raise new issues or comment on issues already raised are welcome.*

### China and the global business revolution

Peter Nolan\*

As China joins the World Trade Organisation, the author questions whether China's large firms will be able to compete on the global level playing field. Over the past two decades, Chinese large enterprises have undertaken extensive evolutionary change (comparable to that of other latecomer countries such as Korea, Taiwan and Singapore) but, at the same time, the world's leading firms have undergone a revolutionary transformation. Based on analysis derived from case studies made in the course of the China Big Business Programme at the Judge Institute of Management Studies, Cambridge, the author concludes that China's large firms have not caught up with the world's leading businesses.

*Key words:* China, Global business revolution, World Trade Organisation

*JEL classifications:* F2, L1, M2, O2, P2

The bourgeoisie, by the rapid development of all instruments of production, by the immensely facilitated means of communication, draws all, even the most barbarian, nations into civilization. The cheap prices of its commodities are the heavy artillery with which it batters down all Chinese walls, with which it forces the barbarians' intensely obstinate hatred of foreigners to capitulate. (Karl Marx, *The Manifesto of the Communist Party*, 1848)

Suppose giant multinational corporations (say 300 from the US and 200 from Europe and Japan) succeed in establishing themselves as the dominant form of international enterprise and come to control a significant share of industry (especially modern industry) in each country. The world economy will resemble more and more the United States economy, where each of the large corporations tends to spread over the entire continent, and to penetrate almost every nook and cranny. (Stephen Hymer, 'The multinational corporation and the law of uneven development', in Radice, H. (ed.), *International Firms and Modern Imperialism*, Harmondsworth, Penguin Books, 1975)

Manuscript received 23 April 2001; final version received 5 September 2001.

*Address for correspondence:* Peter Nolan, Judge Institute of Management Studies, Trumpington Street, Cambridge CB2 1AG, UK; email: p.nolan@jims.cam.ac.uk

\* Judge Institute of Management Studies, Cambridge, UK. This paper is drawn from Nolan (2001A, 2001B). Although I wrote it, the ideas are the product of research undertaken jointly by myself and Dr Wang Xiaoli in the China Big Business Programme, which we direct together. This programme, based at the Judge Institute of Management Studies, University of Cambridge, involved case studies which bench-marked leading Chinese companies against their UK competitors. See also Lloyd (2000). The main arguments from this (*CJE*) article were excerpted in the Chinese weekly journal *Liao Wang (Outlook)* on 10 September 2001. On 11 September, the World Trade Center was destroyed. On 17 September, the World Trade Organisation's working party on Chinese membership finally approved the accession package.

China can obtain 'genuine gold' from opening up, particularly towards the advanced countries. Joining the WTO is the last chance for China's state-owned enterprises to fight their way out from their desperate situation and rise to a new level from their predicament. It is only a matter of time before China joins the WTO and experiences 'pain'. The later that China joins the more pain it will experience, so why not do so now happily? (Li Yining, 2001)

My job is to create oligopoly. (Investment banker, anonymous)

If you outnumber the enemy by ten to one, surround them; by five to one, attack them; by two to one, divide them. If you are equally matched, be good and skillful in battle. If the enemy forces outnumber yours, retreat. (Sun Wu, *The Essentials of Warfare*)

## 1. Introduction

China's entry to the World Trade Organisation (WTO) is an event of historic significance, comparable in importance to the country's opening up after the Opium Wars. Among the many important possible effects is that of the impact on China's large firms. There is a wide variety of views among international experts on this issue, of which the following are representative:

Competition from abroad will help the Chinese to raise their level of efficiency, just like the US car industry did in the 1980s in the face of Japanese competition.

China's entry to the WTO will herald a period of creative destruction of large, outdated state industrial enterprises.

China's large firms will generally be unable to compete on the global level playing field with the world's leading system integrators. China should, therefore, focus on improving the position of its indigenous firms within the global value chain of the world's leading companies.

In the course of two decades of struggle, China's large enterprises have undertaken extensive *evolutionary* change. During the same period, the world's leading firms have undergone a *revolutionary* transformation. As China's entry to the WTO approaches, it is necessary to confront realistically the degree to which China's leading firms are, indeed, ready to compete on the 'global level playing field', and to consider the questions that arise from this analysis.

## 2. China's policy goal

### 2.1 Lessons from other countries

A succession of 'latecomer countries' developed powerful indigenous firms through different measures of industrial policy, including the UK during the Industrial Revolution, the US and Continental Europe in the nineteenth century, and Korea, Taiwan and Singapore in the second half of the twentieth century.

From the 1950s to the 1970s, Japan's industrial planners supported the growth of a series of oligopolistic companies which developed into globally powerful firms. After two decades of industrial policy in Japan, the country possessed a range of globally competitive companies. By the late 1980s, it had 20 of the largest 100 corporations in the Fortune 500 list. Today, it still has over 100 of the Fortune 500 companies and 83 of the world's top 300 companies by R&D expenditure (Department of Trade and Industry (DTI), 2000).

In the light of these experiences, it seemed reasonable for China to follow similar policies to support the growth of its own indigenous large firms. The history of other fast-growing, late-industrialising countries suggested that it was realistic to hope that Chinese large enterprises would be able to 'catch-up' rapidly with the world's leading firms.

## 2.2 *China's ambitions*

China began liberalising the post-Mao economy in the late 1970s. The early versions of the contract system in industry were introduced in 1979. Therefore, one can say that China's industrial policy has been in operation for two decades.

A consistently stated goal of China's industrial policy has been to construct globally powerful companies that can compete on the global level playing field:

In our world today economic competition between nations is in fact between each nation's large enterprises and enterprise groups. A nation's economic might is concentrated and manifested in the economic power and international competitiveness of its large enterprises and groups . . . *Our nation's position in the international economic order will be to a large extent determined by the position of our nation's large enterprises and groups.* (Wu Banguo, Chinese State Council, August 1998, my emphasis)

The state will encourage big state-owned businesses to become internationally competitive corporations by listing on domestic and overseas stock market, increasing research and development expenditure, and acquiring other businesses. *The country will develop thirty to fifty large state-owned enterprises in the next five years through public offerings, mergers and acquisitions, restructuring and co-operation.* (Bai Rongchun, Director General, Industrial Planning Department, State Economic and Trade Commission, July 2001, my emphasis)

China's 'national team' of large firms included: AVIC in the aerospace industry; Sinopec and CNPC in oil and petrochemicals; Sanjiu, Dongbei and Shandong Xinhua in pharmaceuticals; Harbin, Shanghai and Dongfang in power equipment; Yiqi, Erqi and Shanghai in cars; Shougang, Angang and Baogang in steel; and Datong, Yanzhou and Shenhua in coal mining.

China's chosen global giant corporations were supported through industrial policies, which included: tariffs, which still were significant in many sectors at the end of the 1990s; non-tariff barriers, including limitations on access to domestic marketing channels, requirements for technology transfer and to sub-contract to selected domestic firms as the price for market access; government procurement policy; government selection of the partners for major international joint ventures; preferential loans from state banks; and privileged access to listings on international stock markets.

## **3. China's success**

In many respects, China's industrial policies to support large firms were successful:

- large state-owned enterprises avoided the collapse that took place in the state sector in the former USSR;
- industrial output grew at around 13% per annum from the early 1980s to the late 1990s, with sustained rapid growth for large firms;
- major changes took place in the operational mechanism of large, state-owned enterprises: they absorbed a great deal of modern technology; learned how to compete in the marketplace; substantially upgraded the technical level of their employees; learned wide-ranging new managerial skills; and gained substantial understanding of international financial markets;

- China's large firms became sought-after partners for multinational companies. China attracted huge amounts of foreign direct investment. Increasingly, global corporations viewed China as a central element in their long-term strategy;
- a group of large mainland firms were listed successfully on international stock markets;
- by the year 2001, China had 11 firms listed in the Fortune 500.

Despite these important successes, it is necessary to look more closely at the degree to which China's large firms have, in fact, caught up with the world's leading businesses.

#### 4. Are large Chinese firms ready to compete on the global level playing field?

To what extent are China's large corporations ready for the challenge that awaits them inside the WTO? In the course of the China Big Business Programme, we tried to answer this question using case studies from China's 'national team'. In each case, we found evidence of *progress*, but with many *problems* remaining. Moreover, in each case the reform within China was taking place against a background of *revolutionary global change*.

##### 4.1 Aerospace: AVIC

###### *Progress*

AVIC embraces the entire Chinese aeroplane manufacturing industry. It has continued to build and technically upgrade substantial numbers of military aircraft. In the early 1980s, Deng Xiaoping gave powerful support to the attempt to build a large indigenous jet passenger plane: 'Henceforth, China's domestic airlines should use only domestically produced airplanes' (Deng Xiaoping, December 1981). By 1985, AVIC had achieved the extraordinary success of building a large civilian airliner, the Y-10. At this time, Airbus was still in its infancy.

###### *Problems*

The Y-10 failed to find a market with Chinese airlines. Only two were built. Today, the entire fleet of large civilian aircraft consists of planes imported from Boeing and Airbus. China's sub-contracting for the multinational aerospace giants remains at a painfully low level compared with that of Japan or South Korea. The Chinese military has been forced to rely heavily on imported fighters: the airforce is now heavily dependent for advanced fighters on Su27s and Su-30s bought from the former USSR. In the late 1990s, the annual sales revenue of AVIC's core aerospace business totalled less than \$1bn, a tiny fraction of that of the global giants (Table 1). In order to survive, AVIC was forced to develop a vast

**Table 1.** *Selected indicators of the competitive capability of leading Chinese companies compared with the global giants: aerospace*

Company	Revenues (\$bn)	Post-tax profits (\$m)	Employees (000s)	R&D (\$m)
Boeing (1997)	45.8	(178)	239	1,830
Lockheed-Martin (1997)	28.1	1,300	190	1,060
BAe (1997)	10.4	681	44	690
AVIC (1997)	3.1	72	560	n.a.
of which: aerospace	0.7	–	–	–

*Note:* Figures in brackets indicate losses.

*Source:* Nolan (2001A).

empire of diversified non-aerospace businesses, which accounted for around three-quarters of its total sales revenue. In its core business of aerospace, it was totally unable to compete directly with the global giants.

#### Global change

Alongside the halting, uncertain reforms in the Chinese aerospace industry has gone the most revolutionary period in the history of the world aerospace industry. By the late 1990s, after an unprecedented epoch of merger and acquisition, only a tiny handful of firms dominated the entire world industry in both civilian and military aircraft. The epoch of 'national champions' had vanished, to be replaced by just two international European-based corporations, EADS and BAe Systems, competing with the two massive US-based firms, Boeing and Lockheed Martin, for the entire world's market. Ahead lies the prospect of an even greater revolution, with massive transatlantic mergers and acquisitions, likely to affect even the military aerospace sector. Meanwhile, the Chinese aerospace industry, with a huge, highly skilled workforce, is groping for a survival strategy.

#### 4.2 Pharmaceuticals: Sanjiu

##### Progress

Sanjiu is exceptionally interesting from the point of view of industrial policy and catch-up, since it had the backing of the People's Liberation Army. In the 1990s, it rapidly developed a modern business system. It had a powerful leadership team, and an outstanding chief executive officer, Zhao Xinxian. It rapidly developed a powerful brand within China. It had an acute sense of the importance of product quality and modern production systems. It was one of the earliest Chinese firms to develop a modern marketing system. It quickly became one of the leading indigenous firms in this sector.

##### Problems

However, despite these great strengths and business achievements, Sanjiu faces enormous difficulties in competing directly with the multinationals (Table 2). China's pharmaceuticals industry is relatively small and highly fragmented. Even leading pharmaceuticals companies such as Sanjiu are tiny in scale compared with the global giants. R&D is crucial to the ability to compete with the multinational giants, and China's leading pharmaceutical companies, such as Sanjiu, have a minuscule research capability compared with the global leaders. Sanjiu tried to compete by focusing on traditional Chinese medicines. However, it found it very difficult to grow in pharmaceuticals apart from its main product, *Sanjiu Weitai*, a stomach medicine. In order to survive, Sanjiu entered a wide range of

**Table 2.** Selected indicators of the competitive capability of leading Chinese companies compared with the global giants: pharmaceuticals

Company	Revenues (\$bn)	Post-tax profits (\$m)	Employees (000s)	R&D (\$m)
Merck (1997)	26.03	8,069	54	2,760
Novartis (1997)	22.34	6,166	87	2,620
GlaxoWellcome (1997)	17.38	4,626	53	1,870
Sanjiu (1997)	0.67	98 <sup>a</sup>	13	n.a.

<sup>a</sup>Pre-tax profits.

Source: Nolan (2001A).

largely unrelated businesses, including even car production. All of them were on a small scale, and Sanjiu's core pharmaceuticals business remains painfully small in global terms.

#### *Global change*

The 1990s saw a revolution in the world pharmaceuticals industry. It was transformed by a sequence of massive mergers. The share of the top ten pharmaceutical companies in the global market rose inexorably, reaching nearly 50% by the year 2000. By the late 1990s, a small group of colossal pharmaceuticals companies had emerged, with annual revenues of over \$20bn, and multi-billion dollar R&D expenditure. They developed a huge capability to develop drugs through clinical trials and to market their portfolio of drugs through common channels. While Sanjiu was diversifying away from its core business into biscuits, beer, property and cars, the focused global pharmaceuticals giants were consolidating their domination of the world market.

#### *4.3 Complex electrical equipment: the Harbin Power Equipment Company*

##### *Progress*

At the end of the 1970s, compared with other developing countries, China had an advanced power equipment industry. It had three major producing units, Harbin, Shanghai Electrical and Dongfang, with around three-quarters of the domestic market between them. At the beginning of the reform process, these three entities were under a single central source of control. During the reforms, these enterprises faced two decades of rapidly growing demand, providing an important opportunity for catch-up. Under these circumstances, China's leading producers made considerable progress. Harbin benefited greatly from a government-orchestrated programme of technical transfer, enabling it to upgrade its technical capability significantly. If the three main Chinese producers had merged, they would have formed a genuinely large-scale entity, even in global terms.

##### *Problems*

However, China's industrial policy did not follow this path. Instead, the separate production units were allowed to become increasingly autonomous. Shanghai Electrical and other, smaller indigenous plants were allowed to establish joint ventures with multinational companies. They were integrated increasingly into the global business system of the multinational giant companies; power generation became increasingly independent of the equipment-manufacturing sector, and they increasingly looked towards buying equipment with the lowest costs, high levels of reliability and the ability to meet increasingly stringent anti-pollution regulations, irrespective of the country of origin of the manufacturer. The share of multinational companies, through imports and domestic production in joint ventures, rose sharply, reaching over one-half of annual installed capacity by the late 1990s. The entire first tranche of equipment for the massive Three Gorges Project, comprising 14 700-MW units, was awarded to multinational companies.

#### *Global change*

Alongside China's faltering industrial policy in this sector, the global 'battle of the giants' was reaching the endgame. The former 'national champions' have disappeared. Just three giant companies, GE, Siemens and Alstom, dominate the world market, accounting for

**Table 3.** *Selected indicators of the competitive capability of leading Chinese companies compared with the global giants: power equipment (1998)*

Company	Revenues (\$bn)	Post-tax profits (\$m)	Employees (000s)	R&D (\$m)
Siemens	57.95	990	376	5,008
of which: power division	6.39	n.a.	n.a.	n.a.
ABB	29.72	2,500	208	2,368
General Electric	100.47	9,296	293	1,930
of which: power division	8.47	1,306	n.a.	n.a.
Harbin (HPEC)	0.35	9	27	3

*Sources:* Case Studies: China Big Business Programme, 1996–99, in Nolan (2001A) and *Annual Reports*.

almost nine-tenths of total world output of gas turbines. There is no way in which Harbin on its own can compete with the international giants on the global level playing field (Table 3). China has lost its chance to create a global giant in this sector.

#### *4.4 Oil and petrochemicals: CNPC and Sinopec*

##### *Progress*

During the reform years, large institutional changes took place in the Chinese oil and petrochemical sector. The two dominant players, CNPC and Sinopec, were comprehensively reorganised into huge, vertically integrated companies, each combining upstream and downstream assets. The industry absorbed modern management techniques. It made major technical advances, raised substantial capital on international markets through a series of H-share flotations and carried out a huge internal restructuring of the floated companies, PetroChina (CNPC) and Sinopec, to prepare for flotation. A sequence of massive, multi-billion dollar international joint ventures was agreed. These developments gave many people confidence that China was, indeed, building a group of globally competitive large firms.

##### *Problems*

For most of the reform period, production units, such as Daqing Oilfield Bureau and Shanghai Petrochemical Corporation, gained increasing autonomy. Belatedly, in the late 1990s, the central government undertook a comprehensive change of policy direction, attempting to create two new giant, centrally controlled firms. This was a huge task, since there were powerful vested interests at the level of the production enterprises. The struggle to centralise power in the headquarters is not over. The relationship between the floated company and the parent remains unresolved. While the floated ‘children’ may wish for prosperous independence from their ‘parents’, the ‘parents’ (CNPC and Sinopec) have responsibility for a total of 1.5 million employees and several million family members. CNPC and Sinopec have negligible reserves outside China. China’s own reserves have not proved as prolific or as well located as was once hoped. CNPC and Sinopec have a proliferation of high-cost, small-scale refineries: only a small share of their petrochemical output comes from high value-added, high profit margin products. The downstream distribution system is backward compared with the global giants, lacking a portfolio of high value-added products or a modern logistics systems, and is without a global brand.

**Table 4.** *Selected indicators of the competitive capability of leading Chinese companies compared with the global giants: oil and petrochemicals*

Company	Revenues (\$bn)	Post-tax profits (\$m)	Employees (000s)	R&D (\$m)
Exxon/Mobil (1997) <sup>a</sup>	182	11,730	123	720
Royal Dutch/Shell (1997)	128	7,760	105	770
BP Amoco (1997)	123	8,540	123	390
CNPC (1998)	33	107 <sup>b</sup>	1,540 <sup>c</sup>	n.a.
Sinopec (1998)	34	194 <sup>b</sup>	1,190 <sup>d</sup>	n.a.

<sup>a</sup>Proforma.<sup>b</sup>Pre-tax profits.<sup>c</sup>After restructuring for flotation, the number of employees at PetroChina (CNPC) fell to 480,000.<sup>d</sup>After restructuring for flotation, the number of employees at Sinopec fell to 511,000.*Sources:* Case Studies: China Big Business Programme, 1996–99, in Nolan (2001A) and *Annual Reports*.*Global change*

Alongside China's halting, uncertain reforms has gone a revolution in the world's oil and petrochemical industry. This culminated in the massive mergers at the end of the 1990s, notably Exxon/Mobil, BP/Amoco/Arco and Chevron/Texaco. A handful of super-giants now occupy the commanding heights of the industry (Table 4). They possess large, high-quality reserves, distributed around the globe. They have giant integrated oil refineries and petrochemical plants. They have high levels of R&D, and a portfolio of globally leading, high value-added products in the petrochemical and oil products sectors. They have a sophisticated logistics system and immensely powerful global brands.

The Chinese oil and petrochemical industry is still highly protected. The global giants are manoeuvring intensely to increase their position within the Chinese industry. The flotations of CNPC (PetroChina) and Sinopec in 2000 were relatively successful to a considerable degree because the global giants took a substantial share of the floated equity in each of the companies. In return, they were granted greatly increased access to the downstream market, especially in the high-margin petrol station business in the high-income regions. The global giants are steadily increasing their ownership position within the Chinese companies through a series of giant joint ventures in natural gas, oil production and petrochemical complexes. These 'joint ventures' will be closely integrated within their respective global business systems.

*4.5 Car assembly: Shanghai Auto (SAC)**Progress*

China entered the reform period with a highly fragmented car industry. The three core production units within the old planned economy were selected to form the foundation of the reformed industry, namely Shanghai Auto (SAC), Yiqi (Number One Auto) and Erqi (Number Two Auto). Large-scale foreign direct investment in car assembly was guided to these plants. They modernised fast. SAC quickly came to control around 60% of the domestic saloon vehicle market.

*Problems*

By the end of the 1990s, China's saloon vehicle industry was comprehensively dominated by a small number of international joint ventures. The largest of these by far was the VW–SAC 'joint venture'. After more than a decade as a junior joint venture partner to the



global giant VW, Shanghai Auto had no capability at all to compete as an independent car maker. VW even expressed doubt publicly whether it would need its 'partner', SAC, after China entered the WTO. The only 'strategy' left for SAC was to start a second 'joint venture', this time with GM.

#### *Global change*

The global car assembly industry is in the process of high-speed concentration, with large-scale mergers, including the Daimler–Chrysler path-breaking merger, Renault's take-over of Nissan, and Ford's purchase of Volvo's saloon car business. By the end of the decade, the top seven firms in the industry accounted for around two-thirds of total global output. Each of them has a global annual output of between four and nine million vehicles, several times greater than the total Chinese vehicle output. It is now unimaginable that SAC could compete on the global level playing field with the global leaders in the industry.

#### *4.6 Car components: Yuchai*

##### *Progress*

In the car components sector the government's stated policy also was to support the growth of a small number of powerful firms. Yuchai Diesel Engine Company was one of the most successful components companies. Its chief executive officer, Wang Jianming, hoped to develop Yuchai into a Chinese version of the leading US diesel companies such

**Table 5.** *Selected indicators of the competitive capability of leading Chinese companies compared with the global giants: car components*

Company	Revenues (\$bn)	Post-tax profits (\$m)	Employees (000s)	R&D (\$m)
Bosch (1998)	28·61	446	n.a.	2,020
Denso (1998)	13·76	461	57	1,350
Caterpillar (1998)	20·98	1,513	86	838
Cummins Diesel Engine (1998)	6·27	(21)	28	255
Detroit Diesel (1998)	2·16	30	7	98
Yuchai (1998)	0·14	15 <sup>a</sup>	9	n.a.

*Notes:* Figures in brackets indicate losses.

<sup>a</sup>Pre-tax profits.

*Sources:* Case Studies: China Big Business Programme, 1996–99, in Nolan (2001A) and *Annual Reports*.

**Table 6.** *Selected indicators of the competitive capability of leading Chinese companies compared with the global giants: cars*

Company	Revenues (\$bn)	Post-tax profits (\$m)	Employees (000s)	R&D (\$m)
GM (1998)	161·3	2,960	600	7,800
Ford (1998)	171·2	23,160	364	7,500
Daimler–Chrysler (1998)	154·6	5,660	300	5,800
Yiqi (1998)	4·4	21 <sup>a</sup>	156	n.a.
Erqi (1998)	2·6	(5)	134	n.a.
Shanghai (1998)	4·8	594 <sup>a</sup>	60	n.a.

*Notes:* Figures in brackets indicate losses.

<sup>a</sup>Pre-tax profits.

*Sources:* Case Studies: China Big Business Programme, 1996–99, in Nolan (2001A) and *Annual Reports*.

as Caterpillar or Cummins. It grew at high speed, stimulated by the rapid growth in the market for medium-duty trucks. Its growth was due to several astute management decisions. These included the purchase of second-hand equipment from abroad, clever product choice and development, a keen sense of the importance of brand and advertising, including a deep understanding of the importance of product reliability and product guarantees, and early development of a sophisticated, national marketing system.

#### *Problems*

Yuchai persistently lobbied the central government to support them as China's 'national champion' in the diesel engine business. However, Yuchai's main customers, Yiqi and Erqi, persuaded the central government to allow them to retain their independent capability in diesel engines. Erqi established a major joint venture with Cummins Diesel to develop its in-house diesel engine capability, drastically reducing Yuchai's market. By the late 1990s Yuchai faced a bleak market prospect and was virtually bankrupt.

#### *Global change*

In the car components industry, the late 1990s saw an explosion of mergers and concentration. A small group of giant car components companies emerged, each with annual sales of \$10–30bn, huge R&D spending, and a global partnership with the leading car assemblers. Each one dominated their particular sector(s). The world's leading car components companies, such as Delphi, Bosch, Michelin, Denso, Valeo, Caterpillar and Cummins Diesel, entered China in force, incorporating local joint venture partners into their global system. They each have several plants across China, forming a complete business system. The capability of even the most successful of China's independent car components makers, such as Yuchai, to compete on the global level playing field support is negligible.

### *4.7 Steel: Shougang*

#### *Progress*

China's steel industry boomed during the economic reforms. Shougang, one of the top four Chinese steel enterprises, seized the opportunity. Under the leadership of Zhou Guanwu, it rapidly increased its output, undertook comprehensive modernisation, technical upgrading and diversification into activities that might support its further expansion in the steel sector. It developed a significant export capability in both steel and steel plant construction. Its computerisation skills developed sufficiently for it to win an important competitive contract to design and install the control systems for a leading US steel maker. Shougang planned to double its capacity by building a new steel plant at Qilu in Shandong province. To this end it bought very cheaply, a second-hand but modern steel plant from Kaiser Steel in California. Through this plant, Shougang planned to mount a serious challenge to the multinational giant companies. Shougang's expansion strategy and its management style bore a close resemblance to that of Posco, the state-owned South Korean firm. Posco became the world's leading steel company in both output and efficiency.

#### *Problems*

Although Shougang's output grew rapidly, a large part of the growth was in low value-added, low quality products, such as construction steel. At the end of the 1990s, China's top four producers (Shougang, Angang, Baogang and Wugang) had a combined sales

**Table 7.** *Selected indicators of the competitive capability of leading Chinese companies compared with the global giants: steel*

Company	Revenues (\$bn)	Post-tax profits (\$m)	Employees (000s)	R&D (\$m)
Nippon Steel 1998)	21.59	90	28 (1995)	n.a.
Posco (1998)	9.72	680	23 (1994)	n.a.
NKK (1998)	14.15	849	18 (1995)	190
Usinor (1998)	10.65	373	58 (1995)	180
Shougang (1998)	2.16	25 <sup>a</sup>	218 (1997)	n.a.
Baogang (1998)	3.12	265 <sup>a</sup>	35 (1997)	n.a.

<sup>a</sup>Pre-tax profits.

Sources: Case Studies: China Big Business Programme, 1996–99, in Nolan (2001A) and *Annual Reports*.

revenue of \$9.0bn, still well below that of *each* of the main European and East Asian producers (Table 7). This reflected, to a considerable degree, the high proportion of low quality, low value-added products in their output. Zhou Guanwu's ambitious plans to build a new steel plant at Qilu were vetoed by the central government. This rendered irrational much of the company's diversification which had focused on supporting the construction of the Qilu plant.

#### *Global change*

While the Chinese government vetoed Shougang's expansion, the global industry entered a period of revolutionary change. In Europe, a series of large-scale cross-border mergers transformed the industry. There emerged a small group of 'European champions' led by Arbed, Thyssen Krupp, Usinor and Corus. Then, in early 2001, Usinor (France) announced that it was to merge with Arbed (Luxembourg) and Aceralia (Spain). The new entity would leap into first place in the world steel industry, with an annual crude steel output of 45 million tons and sales revenue of around \$24bn. This was followed immediately by the announcement that two of Japan's leading steel firms, NKK and Kawasaki, were to merge. They will produce around 28 million tons of crude steel per year. The global giants all have a world-wide network of plants. They each occupy leading positions in high quality, high value-added steels, and possess formidable marketing and research capabilities. They supply the global needs of large firms in such industries as packaging, cars, complex machinery, high quality construction and white goods. Even in the unglamorous steel industry, globalisation's high-speed advance poses deep challenges for China's large corporations.

#### *4.8 Mining: Shenhua*

##### *Progress*

In the midst of a vast sea of coal producers, the Chinese Government has supported the construction of a group of potentially globally competitive large coal companies. Shenhua is one of these. It has supported Shenhua's development through the grant of property rights to the vast coal reserves under the Ordos Plateau, as well as through large preferential loans. Shenhua is building a railway line to ship coal 800 kilometres from Shenhua to a dedicated port facility on the coast. Starting from scratch, Shenhua had very low manning levels compared with old-established state-owned mines, which gave it a large advantage compared with domestic competitors in relation to wage costs, welfare burden and ability

to organise a highly qualified and highly motivated workforce. It is already a major coal exporter.

### *Problems*

Shenhua faces many difficulties. The property rights over the coal reserves, the new railway and port facilities are ambiguous. It faces a fierce battle with small-scale local producers which are heavily supported by their local governments. It was obliged to accept a merger decided by the central government with five large state-owned mines, three of which are in terminal decline, and which employed 70,000 workers. This threatens to reduce Shenhua's competitive advantage drastically.

### *Global change*

In the 1990s, there emerged a powerful group of modern, international coal companies, supplying modern coal-fired power stations in the US and East Asia. The global giants, such as RWE, Billiton, BHP and Rio Tinto, own large deposits of high quality, mainly open-cast mines. They provide coal that is washed and graded, centrally purchase large amounts of modern large-scale equipment, and supply coal reliably through a tightly integrated transport system. Apart from coal, they have leading global positions in a range of other mining industries. This provides powerful economies of scope applicable across a range of mining products, including finance, branding, marketing, human resources and procurement, and greater resistance to price fluctuations of any given mining sector. The world's leading firms in metals and mining have entered a period of intense consolidation. The latest example is that of BHP and Billiton, which will produce a giant with almost \$20bn annual revenue. While one strong global mining company merged with another through the stock market, Shenhua was forced bureaucratically to merge with a group of dying state-owned enterprises.

## **5. China's failure**

The micro-level evidence of case studies suggests that, in most key respects, China's industrial policies of the 1980s and 1990s failed. The macro data confirm this view.

- At the start of the twenty-first century, not one of China's leading enterprises had become a globally competitive giant corporation, with a global market, a global brand, and a global procurement system.
- The Chinese companies included in the Fortune 500 all faced huge problems of downsizing. China had no less than five of the top ten companies in the Fortune 500 in terms of numbers of employees.
- China had just two companies in the FT 500 which ranks firms by market capitalisation (*Financial Times*, 11 May 2001). These were China Mobile and China Unicom, both of which operate in a totally protected domestic environment. The vast bulk of their IT hardware equipment was purchased from the global giants.<sup>1</sup>
- China did not have one company in the world's *top 300 companies by R&D expenditure* (DTI, 2000).

<sup>1</sup> In 1999, total IT hardware sales in China reached US\$20bn, including mobile infrastructure and hand-sets, traditional fixed line and broadband switching equipment, optical cable/optical cable fibre, and SD and DWDM products. It is estimated that 90% of the IT hardware by value was supplied by the global giants (including Nokia, Motorola, Ericsson, Cisco, Siemens, Alcatel and Lucent) through either imports or their large production networks of within China.

- China did not have any representatives in *Morgan Stanley Dean Witter's* list of the world's top 250 'competitive edge' companies.
- China did not have a single company in *Business Week's* list of the world's top 100 brands.

The blunt reality is that, after two decades of reform, the competitive capability of China's large firms is still extremely weak in relation to the global giants. This is extremely marked in the *high-technology sectors*, such as aerospace, in complex equipment such as power plants, and pharmaceuticals, as well as in '*mid-technology*' sectors such as integrated oil and petrochemicals, car assembly and car components. However, even in sectors with apparently *less advanced technology*, such as steel and coal, there was a significant gap with leading global companies in the high value-added segments of the market. By the simplest of measures of sales revenue, profits and R&D, China's vanguard of leading firms that are intended to 'compete on the global level playing field' are still far behind the global leaders.

If the leading firms in each sector are compared with the global leaders, then it must be acknowledged that, despite significant progress, *China's leading firms are further behind the global leaders than they were when the industrial policies began almost two decades ago*. In these fundamental senses, China's industrial policy of the past two decades must be judged a failure. The reasons for the failure of China's industrial policy are partially internal and partially external.

## **6. Internal reasons for China's failure**

On the internal front, China's industrial policy encountered a number of peculiar problems which make the Chinese policy environment substantially different from that which faced Japan and Korea during their comparable period of catch-up at the level of the large firm:

### *Policy inconsistency*

Within the same industry, radically different policies have been pursued at different times. For example, in oil and petrochemicals, for many years the policy was to increase the autonomy of large production units. Then policy shifted towards total centralised control over large production units. At the same time, completely different policies were pursued in different sectors. For example, while control was being centralised in the oil and petrochemical industry, AVIC was, incomprehensibly, being broken up into two separate entities, each of which was even less able than before to compete with the global giants.

### *Where is the firm?*

The foundation of China's economic reform was to increase 'enterprise' autonomy. The core of most large 'enterprises' was a single large production unit. This had many benefits, including the development of a strong sense of corporate ambition at the enterprise level. However, it caused difficulties in the subsequent attempts to build multi-plant firms with unified central control over individual production units.

### *An impoverished economy*

China is still a poor country, with a relatively tiny middle class. For example, the entire stock of saloon cars is only around five million. A large fraction of domestic demand is for

low price, low value-added products for over one billion peasants, internal migrants and poor urban residents. Indigenous firms have to fight a battle on two fronts, on the one hand with global giants in high value-added products, and on the other hand, with domestic SMEs in low value-added products.

#### *Local protectionism*

China has a strong tradition of relatively autonomous local government. There has been persistent local resistance to cross-regional mergers, owing to fears of downsizing and/or loss of control of a 'local asset'.

#### *Inheritance from the planned economy*

Unlike the other 'late-comer' countries, China's large enterprises inherited huge manning levels, which are extremely hard to reduce without causing social instability. This will remain a deep problem for many years.

#### *Incentive to diversify*

The inability of China's emerging large firms to compete on international markets, plus the fact that they each have a huge workforce, produced a high incentive for the individual enterprise to diversify. A single large enterprise could easily have hundreds of 'children' and grandchildren' subsidiaries and related companies. This gives the 'illusion of scale', but beneath an apparently large firm there are typically hundreds of uneconomically small firms and immense problems of corporate governance.

#### *Failures in China's bureaucracy*

China's bureaucracy lacked the intense nationalist incentive to build large firms successfully that drove Japanese (and Korean) policy makers. China's leaders are engaged in an intense drive to root out corruption from the country's huge bureaucracy. Corruption undermines the bureaucracy's ability to lead industrial policy effectively.

#### *Ideological commitment to state ownership*

China remained for most of the reform period committed to state ownership as a goal in its own right, rather than to building powerful corporations by whatever means were suitable. It proved hard to achieve the separation of government and enterprise that has been advocated for many years.

## **7. External reasons for China's failure**

China's attempt to build large, globally competitive firms coincided with the most revolutionary epoch in world business history, possibly even including the Industrial Revolution. The global business system was much more stable during the period during which Japan, South Korea and Taiwan were putting into place their industrial policies. Moreover, the high-income countries were willing to tolerate extensive state intervention in these countries, because they were viewed as the front line in the fight against Communism. China's efforts to support the growth of competitive global corporations have been made at a time of unprecedented change in the international business system, amounting to nothing less than a revolution. Moreover, China is regarded by the USA as a 'strategic competitor'.

There were a number of aspects to the global business revolution.

*Liberalisation of world trade and capital markets*

The period since the late 1980s has witnessed for the first time the opening up of a truly global market place in goods, services, capital and skilled labour. The only market which still remains bound firmly by nationality is the vast sea of unskilled labour. The world's leading firms have massively increased their production capabilities in fast-growing parts of developing countries. Foreign direct investment (FDI) in developing countries grew from \$24bn in 1990 to \$170bn in 1998. China was, by far, the main focus of attention, with FDI rising from \$3.5bn in 1990 to \$44bn in 1998 (World Bank, 2001, p. 315). The struggle among the world's oligopolistic firms has now penetrated deeply into the most developed parts of the low- and middle-income countries.

*Explosive M&A and concentration*

This period witnessed by the world's most explosive period of mergers and acquisitions (M&A). Global M&A rose from \$156bn in 1992 to around \$3,300bn in 1999. The size of the merger boom of the 1990s eclipses that of any previous epoch. It will leave a long-lasting imprint on the global business structure. In almost every sector (Table 8) a small number of focused global producers dominates the world market. Competitive capitalism's in-built tendency to concentration and oligopoly, which is so vehemently denied by neo-classical economists and the leaders of large corporations alike, has finally been allowed to flower on a global scale.

*'Cascade effect'*

Not only have the core 'systems integrators' experienced this explosive process of concentration, but the deepening interaction between core companies and supplier companies has created an explosive 'cascade' effect that is rapidly leading to concentration and focus among the first-tier suppliers and spilling over even into second- and third-tier suppliers. For example, concentration among leading aircraft assemblers has stimulated concentration among the main aerospace components suppliers: there are now just three makers of large aircraft engines across the world. Concentration among car assemblers has stimulated concentration among car components makers: the top three tyre makers account for almost two-thirds of global output. In sector after sector, the 'first-tier' suppliers are themselves multi-billion dollar companies with 'global reach'. This makes the competitive landscape even more challenging for firms from developing countries.

*The 'external firm'*

Through the hugely increased planning function undertaken by systems integrators, facilitated by recent developments in information technology, the boundaries of the large corporation have become blurred. In order to develop and maintain their competitive advantage, the systems integrators penetrate deep into the value chain both upstream and downstream. They are closely involved in business activities that range from long-term planning to meticulous control of day-to-day production and delivery schedules. Competitive advantage for the systems integrator requires that it must consider the interests of the whole value chain in order to minimise costs across the whole system. Far from becoming 'hollowed out' and much smaller in scope, the extent of control exercised by the large firm has enormously increased during the global business revolution.

**Table 8.** *Global oligopoly in the business revolution*

Company name	Sector	Global market share (%)	Source
<i>Aerospace</i>			
Boeing	commercial aircraft orders over 100 seats	70	MSDW (1998)
Airbus	commercial aircraft orders over 100 seats	30	MSDW (1998)
Rolls-Royce	aero-engine orders	34	<i>FT</i> , 6 Mar. (1998)
GE	aero-engine orders	53	<i>FT</i> , 6 Mar. (1998)
Pratt & Whitney	aero-engine orders	13	<i>FT</i> , 6 Mar. (1998)
<i>IT</i>			
Lucent	Internet and telecoms equipment	17	<i>FT</i> , 27 Oct. (1999)
Intel	micro-processors	85	MSDW (1998)
Microsoft	computer systems	90+	MSDW (1998)
Cisco	computer routers	66	MSDW (1998)
	high end routers	80	MSDW (1998)
Corning	optical fibres	50	<i>FT</i> , 15 Nov. (1999)
Hyundai Electronics	DRAMs	21	<i>FT</i> , 15 Oct. (1999)
Samsung Electronics	DRAMs	20	<i>FT</i> , 15 Oct. (1999)
Sony	electronic games	67	<i>FT</i> , 29 Mar. (2000)
Nintendo	electronic games	29	<i>FT</i> , 29 Mar. (2000)
Ericsson	mobile phones	15	<i>FT</i> , 8 Feb. (1999)
Nokia	mobile phones	23	
Motorola	mobile phones	20	
<i>Pharmaceuticals</i>			
GlaxoWellcome/SKB	prescription drugs	7	<i>FT</i> , 18 Jan. (2000)
	central nervous system	12	GlaxoWellcome,
	anti-infection	17	Annual Report
	respiratory	17	(1999)
	anti-asthma	31	
	anti-herpes	49	
Merck	prescription drugs	5	<i>FT</i> , 18 Jan., (2000)
	statin anti-cholesterol	40	Merck, Annual
	angiotension converting enzyme inhibitors	30	Report (1998)
Medtronic	Implantable/interventional therapy technologies <sup>a</sup>	45	MSDW (1998)
	pacemakers	50+	MSDW (1998)
<i>Cars</i>			
Ford/Mazda/Volvo	cars	16	MSDW (1999)
GM	cars	15	MSDW (1999)
Daimler-Chrysler	cars	10	MSDW (1999)
VW	cars	9	MSDW (1999)
Toyota	cars	9	MSDW (1999)
Renault/Nissan	cars	9	MSDW (1999)
<i>Car components</i>			
Pilkington	auto glass	25	<i>FT</i> , 21 May (1996)
GKN	constant velocity joints	40	<i>FT</i> , 22 July (1996)



Table 8. (Continued)

Company name	Sector	Global market share (%)	Source
Tenneco	shock absorbers/car exhaust systems	25	FT, 28 Oct. (1996)
Denso	air control systems	25	Denso Annual Report (1999)
Valeo	air control systems	22	Valeo Annual Report (1999)
Lucas	brake systems	25	FT, 8 May (1996)
Bosch	brake systems	31	FT, 8 May (1996)
Bridgestone	tyres	17	FT, 3 Aug. 2001
Michelin	tyres	19	FT, 3 Aug. 2001
Goodyear	tyres	20	FT, 3 Aug. 2001
<i>Petrochemicals</i>			
BP Amoco	PTA	37	BP Amoco, Annual Report (1999)
	acetic acid (technology licenses)	70	
	acrylonitrile (technology licenses)	90	
<i>Complex equipment</i>			
Siemens	control/automation equipment	10	FT, 24 Nov. (1998)
ABB	control/automation equipment	9	FT, 24 Nov. (1998)
Emerson	control/automation equipment	8	FT, 24 Nov. (1998)
Fanuc	machine tool controls	45	FT, 11 Sept. (1996)
Schindler	lifts	25	FT, 30 Mar. (1999)
Otis	lifts	18	FT, 30 Mar. (1999)
Mitsubishi	lifts	13	FT, 30 Mar. (1999)
Kone	lifts	9	FT, 30 Mar. (1999)
<i>Fast-moving consumer goods</i>			
Coca-Cola	carbonated soft drinks	51	Coca-Cola, Annual Report (1998)
Chupa Chups	lollipops	34	FT, 31 Mar. (2000)
Proctor & Gamble	tampons	48	MSDW (1998)
Gillette	razors	70	MSDW (1998)
Fuji Film	camera films	35	MSDW (1998)
Nike	sneakers	36	MSDW (1998)
<i>Packaging</i>			
Toray	polyester film	60	FT, 15 May (1998)
Sidel	PET plastic packaging machines	55	Sidel, Annual Report (1998)
Alcoa/Reynolds	aluminium	24	FT, 27 Oct. (1999)
<i>Power equipment</i>			
GE	gas turbines (1993–98)	34	FT, 24 Mar. (1999)
Siemens/Westinghouse	gas turbines (1993–98)	32	FT, 24 Mar. (1999)
ABB/Alstom	gas turbines (1993–98)	21	FT, 24 Mar. (1999)

<sup>a</sup>Including pacemakers, implantable defibrillators, leads, programmers for treatment of patients with irregular heart-beats.

**Table 9.** *Dominance of firms based in high-income countries of the global big business revolution*

	Population		GNP, 1997 <sup>a</sup>		GNP, 1997 <sup>b</sup>		Fortune 500 companies (1998) <sup>c</sup>		FT 500 companies (1998) <sup>d</sup>		Top 300 companies by R&D spend (1997)		Stock market capitalisation (1997)	
	(bn)	(%)	(\$bn)	(%)	(\$bn)	(%)	(No.)	(%)	(No.)	(%)	No.	(%)	(\$bn)	(%)
HIEs	926	16	23,802	80	21,091	57	474	95	484	97	299	99	18,452	91
L/MIEs	4,903	84	6,123	20	15,861	43	26 <sup>e</sup>	5	16 <sup>f</sup>	3	2	1	1,725	9

<sup>a</sup>At prevailing rate of exchange.<sup>b</sup>At PPP dollars.<sup>c</sup>Ranked by sales revenue.<sup>d</sup>Ranked by market capitalisation.<sup>e</sup>Of which: Korea = 9, China = 6, Brazil = 4, Taiwan = 2, Venezuela = 1, Russia = 1, India = 1, Mexico = 1, Malaysia = 1.<sup>f</sup>Of which: Hong Kong = 7, Brazil = 2, Taiwan = 2, Singapore = 1, Mexico = 1, India = 1, Korea = 1, Argentina = 1.

HIEs = High Income Economies; L/MIEs = Low/Middle Income Economies

Sources: *Financial Times* (28 January 1999); World Bank (1998, pp. 190–1, 220–1); *Fortune* (2 August 1999); DTI (1998, pp. 70–80).

*Dominance of firms based in advanced economies*

Regions containing a small fraction of the world's population have dominated the global business revolution (Table 9). The high-income economies contain just 16% of the world's total population. They account for 91% of the world's total stock market capitalisation, 95% of Fortune 500 companies, 97% of the FT 500 companies, 99% of the world's top 300 companies by value of R&D spending and 99% of the world's top brands.

North America is, by far, the world leader in this process. North America has just over 5% of the world's population, but it accounts for 40% of the Fortune 500 firms, 46% of the world's top 300 firms by R&D expenditure (74% of the top 300 IT hardware and software firms, ranked by R&D spending), 50% of the FT 500 firms, 54% of Morgan Stanley's list of the top 250 'global competitive edge' firms, and 61% of the world's top 100 brands.

Developing countries are massively disadvantaged in the race to compete on the global level playing field of international big business. The starting points in the race to dominate global markets could not be more uneven. The whole of the developing world, containing 84% of the world's population, contains just 26 Fortune 500 companies, 16 FT 500 companies, 15 of Morgan Stanley's list of the 250 leading 'competitive edge' companies, one of the world's top 100 brands and none of the world's top 300 companies by R&D expenditure.

## 8. Conclusion

China's rapid move towards 'close' integration with the world economy is occurring at a time of revolutionary change in the global business system. The evidence presented in this paper suggests that China's large firms are far from ready to compete on the 'global level playing field'. This presents an extreme challenge for China's industrial strategy. As China's entry to the WTO approaches, there are a series of critical questions that need to be answered:

- Would privatisation of China's large enterprises be sufficient to make them globally competitive?
- At which level in the global value chain are large Chinese firms best able to compete: 'core systems integrator', 'first tier supplier' or lower down the value chain?
- What role will be permitted for national industrial policy in China within the WTO?
- Does China's bureaucracy have the capability to administer industrial policy effectively?
- Does it matter whether China has 'national champions' that can compete on the 'global level playing field'?
- Does the experience of the former USSR support the proposition that in system reform 'more pain' produces 'more gain'?

## Bibliography

- Department of Trade and Industry various years. *UK R&D Scoreboard*, Edinburgh, DTI
- Lloyd, J. 2000. The China syndrome, *FT Weekend*, 8–9 January
- Morgan Stanley Dean Witter (MSDW) various years. *The Competitive Edge*, New York, MSDW
- Nolan, P. 2001A. *China and the Global Business Revolution*, Basingstoke, Palgrave
- Nolan, P. 2001B. *China and the Global Economy*, Basingstoke, Palgrave
- World Bank, various years. *World Development Report*, New York, Oxford University Press

